Antibody-based tools and protocols for improving stem cell characterization workflows

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ABSTRACT

Stem cell biology constitutes one of the fastest growing areas in the life sciences. Accordingly, there is strong demand for improving the characterization tools and protocols available to stem cell researchers. We report here the development of a series of antibody-based tool sets and protocols that facilitate detection of important cellular markers of pluripotent stem cells and the differentiated cell types that can be derived from them (e.g., three germ layers, neural stem cells, cardiomyocytes). First, optimized immunocytochemistry reagent sets were identified by screening panels of validated primary antibodies against established stem cell markers and matching them up with appropriate dye-conjugated secondary antibodies and optimized fixation, permeabilization, blocking, and wash buffer systems. These optimized immunocytochemistry workflows enable more information per sample via multiplex staining, which saves multiple characterization steps and markers to confirm cell identity. We demonstrated here several improvements will significantly augment the current characterization approaches available to stem cell researchers.

RESULTS

Generating optimized immunocytochemistry reagent sets

Streamlining traditional immunocytochemistry protocols

Enabling more information per sample via multiplex staining

Improving live-cell staining workflows

CONCLUSIONS

The process of generating stem cells and differentiating them into cell types of interest involves multiple characterization steps and markers to confirm cell identity. We demonstrated here several improvements to the protocols and tool sets available for stem cell characterization workflows involving antibody-based detection methods for live-cell staining and fixed-cell immunocytochemistry.

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REFERENCES


TRADEMARKS

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